

each of the calibration gas mixtures in triplicate using Method 7 or the procedure outlined in Citation 1 for NO_x and use Method 3 for O₂ or CO₂. Record the results on a data sheet (example is shown in Figure 20-2). For the low-level, mid-level, or high-level gas mixtures, each of the individual NO_x analytical results must be within 10 percent (or 10 ppm, whichever is greater) of the triplicate set average (O₂ or CO₂ test results must be within 0.5 percent O₂ or CO₂); otherwise, discard the entire set and repeat the triplicate analyses. If the average of the triplicate reference method test results is within 5 percent for NO_x gas or 0.5 percent O₂ or CO₂ for the O₂ or CO₂ gas of the calibration gas manufacturer's tag value, use the tag value; otherwise, conduct at least three additional reference method test analyses until the results of six individual NO_x runs (the three original plus three additional) agree within 10 percent (or 10 ppm, whichever is greater) of the average (O₂ or CO₂ test results must be within 0.5 percent O₂ or CO₂). Then use this average for the cylinder value.

5.2 Measurement System Preparation. Prior to the emission test, assemble the measurement system following the manufacturer's written instructions in preparing and operating the NO₂ to NO converter, the NO_x analyzer, the diluent analyzer, and other components.

FIGURE 20-2—ANALYSIS OF CALIBRATION GASES

Date _____ (Must be within 1 month prior to the test period)
Reference method used _____

Sample run	Gas concentration, ppm		
	Low level ^a	Mid level ^b	High level ^c
1			
2			
3			
Average			
Maximum % deviation ^d			

^a Average must be 20 to 30% of span value.

^b Average must be 45 to 55% of span value.

^c Average must be 80 to 90% of span value.

^d Must be $\leq \pm 10\%$ of applicable average or 10 ppm, whichever is greater.

5.3 Calibration Check. Conduct the calibration checks for both the NO_x and the diluent analyzers as follows:

5.3.1 After the measurement system has been prepared for use (Section 5.2), introduce zero gases and the mid-level calibration gases; set the analyzer output responses to the appropriate levels. Then introduce each of the remainder of the calibration gases described in Sections 4.3 or 4.4, one at a time, to the measurement system. Record the responses on a form similar to Figure 20-3.

5.3.2 If the linear curve determined from the zero and mid-level calibration gas responses does not predict the actual response of the low-level (not applicable for the diluent analyzer) and high-level gases within 2 percent of the span value, the calibration shall be considered invalid. Take corrective measures on the measurement system before proceeding with the test.

5.4 Interference Response. Introduce the gaseous components listed in Table 20-1 into the measurement system separately, or as gas mixtures. Determine the total interference output response of the system to these components in concentration units; record the values on a form similar to Figure 20-4. If the sum of the interference responses of the test gases for either the NO_x or diluent analyzers is greater than 2 percent of the applicable span value, take corrective measure on the measurement system.

FIGURE 20-3—ZERO AND CALIBRATION DATA

Turbine type Identification number.
Date Test number.
Analyzer type Identification number.

	Cylinder value, ppm or %	Initial analyzer response, ppm or %	Final analyzer responses, ppm or %	Difference: initial-final, ppm or %
Zero gas.				
Low-level gas.				
Mid-level gas.				
High-level gas.				